EPA/ROD/R04-93/129
1993

EPA Superfund
Record of Decision:

CEDARTOWN INDUSTRIES, INC.
EPA ID: GAD095840674
OU 01
CEDARTOWN, GA
05/07/1993

RECORD OF DECISION

SUMMARY OF REMEDIAL ALTERNATIVE SELECTION

CEDARTOWN INDUSTRIES SITE

CEDARTOWN, POLK COUNTY, GEORGIA

PREPARED BY

U.S. ENVIRONMENTAL PROTECTION AGENCY

REGION IV

ATLANTA, GEORGIA

DECLARATION
of the
RECORD OF DECISION

SITE NAME AND LOCATION

Cedartown Industries Site
Cedartown, Polk County, Georgia

STATEMENT OF BASIS AND PURPOSE

This decision document (Record of Decision), presents the selected remedial action for the Cedartown Industries Site, Cedartown, Georgia, developed in accordance with the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), 42 U.S.C. 9601 et seq., and to the extent practicable, the National Contingency Plan (NCP), 40 CFR Part 300.

This decision is based on the administrative record for the Cedartown Industries Site.

The State of Georgia concurs with the selected remedy.

ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from the Cedartown Industries Site, if not addressed by implementing the response action selected in this Record of Decision (ROD), may present an imminent and substantial endangerment to public health, welfare, or the environment.

DESCRIPTION OF THE SELECTED REMEDY

This action is the first and final action planned for the Site. This alternative calls for the design and implementation of response measures which will protect human health and the environment. The action addresses the principal threat at the Site, the contaminant sources in the soil, as well as the localized groundwater contamination at the Site.

The major components of the selected remedy include:

- Excavation and Ex-situ solidification/stabilization of all soils exhibiting lead levels exceeding 500 ppm (500 mg/kg);

- long-term monitoring of all existing groundwater monitoring wells to determine if immobilization of the source contaminants provide natural attenuation of the contaminant levels in the shallow groundwater;

- if natural attenuation of the groundwater contamination is not effective, a pump and treat system shall be considered with EPA determining the requirement for system implementation; and

- institutional controls in the form of deed restrictions and record notices for land use and groundwater use restrictions shall be placed on the Site.

STATUTORY DETERMINATIONS

The selected remedy is protective of human health and the environment, complies with Federal and State requirements that are legally applicable or relevant and appropriate, and is cost-effective. This remedy satisfies the statutory preference for remedies that employ treatment that reduces toxicity, mobility, or volume as a principal element. Finally, it is determined that this remedy utilizes a permanent solution and treatment technology to the maximum extent practicable.

Because this remedy may result in hazardous substances remaining on-site, a review will be conducted within five years after commencement of the remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Decision Summary
Record of Decision
Cedartown Industries Site
Cedartown, Georgia

1.0 SITE LOCATION AND DESCRIPTION

The Cedartown Industries Site is located at 404 Furnace Street in Cedartown, Georgia, about one-half mile from the downtown area. Figures 1-1 and 1-2 are a Site location map and a general Site map, respectively. The Site is comprised of 6.8 acres on which a secondary lead smelting business operated for approximately two years. Currently, three buildings are located on the property. One of these buildings currently houses the offices of H&W Transfer Company which leases the Site from the current owners for the parking and maintenance of vehicles. The Site is bordered by Cedar Creek on the west and a chain link fence to the north, south, and east. A levee, constructed in 1980, borders the Site to the west, north, and south and is designed to protect the Site from a 100-year flood. Immediately north of the Site is a narrow strip of land and railroad tracks owned by CSX Transportation, and beyond the tracks is a junkyard that has been in existence since at least the 1940's. Across the street to the east is a farm supply store that is now out of business, and to the south is a large, partially wooded area owned by the current owner of the Cedartown Industries Site. In general, land use in the vicinity of the Site, especially to the south and west, is largely agricultural and industrial.

2.0 SITE HISTORY

The Cedartown Industries Site was initially operated as an iron foundry under the name Cherokee Furnace. The foundry opened in about 1874 with a capacity of about 50 tons per day. At the turn of the century, the furnace was processing about 100 tons per day. The ore for the furnace was supplied by the numerous iron mines northwest of the Site, among them, the Cherokee Mine run by the Alabama and Georgia Iron Co. The principle ore mineral was limonite, along with minor iron hydroxides (goethite, xanthosiderite, limnite). Ore was reportedly shipped to the furnace along a narrow gauge railway that crossed Cedar Creek just south of the present CSX rail line.

In the 1930's, Mr. A.C. Duke bought the furnace and changed the name to Cedartown Foundry. The foundry reportedly supplied water pumps to the Ford Motor Company during this period as well as plow blades to Rome Plow. The Property changed ownership in September 1939, but still operated under the name Cedartown Foundry. The Site later operated as a machine shop. From February 1978 to May 1980, the Site was used as a secondary lead smelting business. The secondary lead smelting operation purchased raw lead materials from various suppliers and recycled these materials through various melting and skimming processes. Although a battery cutting operation including a concrete surface impoundment was partially constructed on site, the operation was terminated before batteries were broken on site.

Mr. Ray A. Lewis and Ann P. Lewis, the current property owners, purchased the Site on August 15, 1984. The Site has been leased to the H&W Transfer Company for the parking and maintenance of vehicles, mainly tractor trailers. A Chemical Leeman trucking facility also leases a portion of the Site. The property east of the Site at the present Gold Kist location was reportedly a coke smelter at the time the Cedartown Foundry was operating. The adjoining property south of Gold Kist was reportedly the City of Cedartown landfill, which was closed in the late 1930's to early 1940's.

When the lead smelting operation was terminated in 1980, waste material remained on site. On January 7, 1986, the Georgia Environmental Protection Division (EPD) conducted an investigation and environmental sampling at the Site. A Site Inspection prepared by the Georgia EPD in 1986 cited the presence of approximately 5,000 cubic yards of slag material and 32,000 gallons of wastewater in the inactive impoundment. The Site investigation also reported that lead and cadmium were detected both in on site waste piles and in the soil. The only compound reported in significant quantity during the investigation was lead.

Under the direction of U.S. EPA Region IV, an Interim Waste removal project was completed in May 1990 to remove slag and coke storage piles, contaminated debris and soil, wastewater, and impoundment sediment from the Site, and properly dispose of the waste material in an off-Site landfill permitted under Resource, Conservation and Recovery Act (RCRA) Subtitle C. A total of 6,700 cubic yards of solid hazardous materials (approximately 8,380 tons), including slag, soil, sediment, and debris, were removed and transported to the Chemical Waste Management Landfill in Emelle, Alabama. A total of 62,225 gallons of liquid waste (non-hazardous rainwater) was transported to the Sanders Lead Wastewater Treatment and Recovery System in Troy. The industrial wastewater treatment system is designed and permitted to treat metal-containing liquid waste. The small coke pile was also removed from the Site and was used as fuel feed for the lead smelting process at the Sanders Lead Facility in Troy, Alabama. At the conclusion of the Interim Waste Removal, no visible waste material was present at the Site. The tasks completed during the interim waste removal were conducted in accordance with applicable federal regulations which require that all interim removals at NPL Sites must be consistent with the final remedy ofthe agency selection in the Record of Decision (ROD).

The Cedartown Industries Site was proposed for listing on the National Priorities List (NPL) in 1988 and finalized in February 1990. In June 1990, Sanders Lead entered into an Administrative Order on Consent with EPA to conduct the Remedial Investigation/Feasibility Study (RI/FS) to determine the nature and extent of contamination at the Site, to evaluate the associated risks, and to evaluate alternatives for eliminating those threats. Sanders Lead, under EPA's oversight, began field activities for the first phase of the remedial study in January 1991. The RI/FS was completed in December of 1992.

3.0 HIGHLIGHTS OF COMMUNITY PARTICIPATION

All basic requirements for public participation under CERCLA sections 113(k)(2)(B)(i-v) and 117, were met in the remedy selection process. Because the local community has been interested and involved in the Cedartown Industries Site status during the removal and the remedial activities at this Site, community relations activities remained an important aspect throughout the RI/FS process. The community relations program at the Cedartown Industries Site was designed to maintain communication between the residents in the affected community and the government agencies conducting remedial activities at the Cedartown Industries Site. Frequent communication with nearby residents and local officials has been maintained as a priority. Special attention has been directed toward keeping the community informed of all study results. Meetings were held with Cedartown city officials. Prior to approval of the RI/FS Workplan, EPA officials attended a local Chamber of Commerce public forum and a Kiwanis Club meeting. In addition, a meeting was held with the community at an availability session in the Winter of 1991 to inform residents of EPA's intentions and to obtain input concerning sampling locations and health and safety procedures.

On January 14, 1993, after the finalization of the Remedial Investigation Report and the completion of the Feasibility Study, EPA presented its preferred remedy for the Cedartown Industries Site during a public meeting at the Cedartown Public Library, 245 East Avenue, Cedartown, Georgia. The 30-day public comment period was held December 28, 1992, through January 27, 1993. A copy of the Administrative Record, upon which the remedy was based, is located at the Cedartown Public Library, 245 East Avenue, Cedartown, Georgia 31701. EPA's responses to comments which were received during the comment period are contained in Appendix A.

4.0 SCOPE AND ROLE OF REMEDY

This remedy is the first and final remedial action for the Site. The function of this remedy is to reduce the risks associated with exposure to contaminated soils and groundwater.

The selected remedial alternative will address three conditions which pose a threat to human health and the environment:

- Contaminated groundwater in the uppermost or surficial aquifer (may potentially impact drinking water supplies);

- contaminated surface soils (presents a continuing direct contact threat to the public health); and

- contaminated subsurface soils (present a continuing source of contamination to the surficial aquifer).

Pathways of exposure include:

- Ingestion of contaminated soils and groundwater; and

- dermal contact with contaminated soils and potential absorption of contaminants.

The major components of the remedy are:

- Excavation of contaminated soils and materials exhibiting lead levels exceeding 500 ppm (500 mg/kg);

- ex-situ solidification/stabilization of excavated contaminated soil and materials;

- backfilling excavations using solidified material and a clean compacted fill cover;

- restoring excavations to original grade and repaving (gravel, asphalt, or vegetative);

- institutional controls, such as deed restrictions and record notices shall be placed on the Site which will be established to preclude usage of groundwater and minimize land use; and

- monitoring of contaminated groundwater in the surficial aquifer with possible extraction and treatment of groundwater if natural attenuation is not effective.

This remedy addresses the first and final cleanup action planned for the Site. The contaminants present in the soil pose a threat to human health and the environment because of the risks associated with possible ingestion (eating or drinking) or dermal contact (through the skin). Also, the shallow groundwater present beneath the Site contains elevated levels of a contaminant similar to that present in soils at the Site. Although this water bearing zone is affected, the contamination is contained on site, and is not affecting the public drinking water supply (Cedartown Springs) and aquatic biota of Cedar Creek. The purpose of this proposed action is to prevent current or future exposure to the contaminated soils, including associated contaminated groundwater, and to reduce the migration of contaminants.

5.0 SUMMARY OF SITE CHARACTERISTICS

5.1 GEOLOGY/SOILS

The Cedartown Industries Site geology was determined from regional geological information and from Site-specific data gathered during the Remedial Investigation (RI).

The Cedartown Industries Site is located within the Valley and Ridge Province of northwestern Georgia. The bedrock in the region is composed of Paleozoic marine and continental sediments that were folded and faulted during polyphased Appalachian orogenesis.

The Ordovician Newala Limestone forms the bedrock under the majority of Cedartown, and the Cambrian to Ordovician undifferentiated Knox Group comprises the bedrock along the eastern side of Cedartown. The Newala Limestone consists predominantly of limestone with lesser dolomite in the Cedartown area.

The Knox Group is composed of three formations: the Late Camorian Copper Ridge Dolomite, the Early Ordovician Chepultepec Dolomite, and the Early Ordovician Longview Limestone. All three of the formations that represent the Knox Group are lithologically similar. These units are generally light to medium gray, cherty, and, in the Cedartown area, are dominated by dolomite.

Residuum developed over the Knox Group is reportedly as thick as 300 feet, normally ranging from 50 to 150 feet thick, and the Newala is commonly covered by a residuum 25 to 150 feet thick.

Structurally, the outcrop pattern of the bedrock in western Cedartown appears to be controlled largely by a south to southwest-trending syncline that plunges to the south. The axial trace of the syncline is just to the west of the Cedartown Industries Site and nearly corresponds to the stream bed of Cedar Creek at the Site.

The dominant topographic trends in the bedrock surface under the Site are generally east-west or east-northeast and west-southwest. Maximum local relief on the bedrock surface is about 35 feet based on borehole data. It appears that the bedrock surface may be characterized by broad topographic highs interrupted by narrow, linear, topographically low areas with relatively steep sides. Some of these vertical features may be connected to lateral solution voids in the upper portion of the bedrock.

The upper surface of the bedrock is relatively unweathered. There is no identifiable transition zone of saprock (weathered boulders of limestone in a matrix of residuum) above the bedrock surface. Immediately overlying the limestone bedrock is a sequence of unconsolidated sediments ranging from seven feet thick to more than 45 feet thick. The sediments are dominated by silty clays and clayey to sandy silts. Compositional variations consistent with bedding are apparent in some of the sediments, but many of the sediments are unstratified based on inspection of recovered material.

It appears that a considerable portion of the near surface soils at the Site was fill emplaced both prior to and after its use as a lead smelter. Many of the soils at the Site contain no primary structures. Any backfill used at the Site likely would have been removed from local borrow pits, thus these materials would be compositionally consistent with locally derived material. Fill at some portions of the Site appear to be at least 14 feet thick. Soils derived from flood plain and channel deposits of Cedar Creek are widespread at the Site and form the bulk of the native soils. In general, the alluvial deposits are moderately to poorly sorted. These alluvial deposits are composed of sands, silts and clays, and pebble to gravel rich strata. Where the bedrock surface is topographically low, the alluvial deposits are dominated by relatively clean silty sands. These sands extend to depths greater than 45 feet below surface in an area trending east-west across the Site. Most of the soils tested are assigned to the CL group of the United Soil Classification System, based upon the Atterberg limits. Natural moisture ranged from 15.1 percent to 45.0 percent. Reported saturated hydraulic conductivities ranged from 1.06 x 10[-4] cm/sec for a silty sand to sandy silt to 2.65 x 10[-8] cm/sec for sandy silt.

Surface soil samples collected for laboratory analysis appeared to be largely represented by fill material. Thus, individual surface soil samples were not characterized within the context of the USDA/SCS soil classification system.

5.2 HYDROGEOLOGY

There are two distinct units within this karst aquifer at the Cedartown Industries Site. These units are hydraulically connected, but represent differing lithologies. The uppermost or surficial portion of the aquifer at the site resides in the unconsolidated sediments and represents the entire thickness of the sediments. The underlying hydrogeologic unit is the bedrock portion of the aquifer. The Newala Limestone in Polk County carries substantial groundwater in secondary features, predominantly solution-enlarged fractures. Existing site bedrock wells are screened in clean, open fractures, in solution modified fractures, and in voids, but generally produce low volumes of water. Information from existing site wells and borings indicates that the bedrock hydraulics are variable, and are largely dependent upon nature of the water bearing structure (i.e. solutionally enlarged fracture development) and its position relative to the bedrock surface.

The bedrock or underlying portion of the aquifer is the primary source for drinking water wells and the source for Cedar Spring located upgradient from the Site. Groundwater at the Site is present under unconfined conditions. Surveying demonstrated that the maximum potentiometric surface observed at the Site is generally lower than the elevation of Cedar Spring. Thismeans that groundwater flows from Cedar Spring to the Site, rather that from the Site to Cedar Spring.

5.2.1 SURFICIAL UNIT

Wells screened in the unconsolidated sediments are generally 15 to 20 feet deep. The potentiometric data from the Site suggested that the surficial aquifer is discharging to Cedar Creek. The creek bed at this location appears to be developed on the bedrock surface. The surficial unit is likely recharged by precipitation at unpaved areas of the Site and by lateral groundwater flow from the east, northeast, and southeast.

Hydraulic conductivity values ranged from a high of 3.335×10^{-3} cm/sec to a low of 9.797×10^{-5} cm/sec. These values are typical for silty to clayey sands.

5.2.2 BEDROCK UNIT

Full characterization of the hydrogeology of fractured rocks is difficult because different fractures may exhibit varied hydraulic characteristics depending on such factors as their geometry, location, and extent. Wells were screened in the bedrock at the Site. Although the bedrock at the Site is herein treated as one system, it can be viewed as containing two geologic components.

The upper portion of the bedrock aquifer or upper bedrock unit contains more extensive solution cavities and extends as bedrock pinnacles into the overlying unconsolidated sediments. Because most of the solution voids in this portion of the bedrock are filled with sediments and the pinnacles are apparently intersected by fractures, this portion of the bedrock is probably hydraulically interconnected with materials in the uppermost unit. Groundwater in the upper bedrock unit freely communicates with the surficial zone and groundwater quality is similar in both zones, therefore, the unconsolidated sediments and the upper bedrock unit are hydraulically interconnected.

Field investigations indicated that the bedrock below a depth of about 70 feet represents a different component of the bedrock geologic system. Deep bedrock monitoring wells were installed with an outer casing extending to approximately 70 feet and were screened at a depth of approximately 100 feet. These wells were designed to monitor portions of the bedrock that may not be directly hydraulically interconnected with the overlying unconsolidated sediments due to the reduced number of fractures, reduced groundwater flow, and reduced interconnectedness.

Results of water level measurements indicate that groundwater elevations were inconsistent in relation to the extrapolated elevation of the potentiometric surface of the surficial unit. This is not uncommon in karsthydrogeologic settings. The chemistry of groundwater samples from these wells was found to be substantially different that the chemistry of groundwater from the wells in the upper bedrock unit. This is attributed to the reduced fracture development and connectivity of pore space. Data also indicates there is a measurable upward gradient from the bedrock unit to the unconsolidated portion of the aquifer.

5.3 SUMMARY OF SITE CONTAMINATION

An Interim Waste removal project was completed in May 1990 and removed slag and coke storage piles, contaminated debris and soil, wastewater, and impoundment sediment from the Site. A total of 6,700 cubic yards of solid hazardous materials (approximately 8,380 tons), including slag, soil, sediment, and debris in addition to 62,225 gallons of liquid waste were removed.

The Remedial Investigation was initiated in 1991. RI sampling, conducted in three phases from June 1991 to July 1992, focused on areas related to former smeltering operations and areas impacted from the Interim Waste Removal. The soils and groundwater at the Site have been impacted by past industrial and waste practices at the Site. The vertical and horizontal extent of contaminants have been defined. Table 5-1 and Figure 1 defines the sampling matrix and locations for the RI.

5.3.1 SUBSTANCES DETECTED IN SOILS

Of greatest concern are surface and subsurface soils over most of the Site exhibiting elevated levels of heavy metals, most notably lead. In general, subsurface soils have not been impacted at depths greater than four (4) feet. However, in one location, lead is present in elevated concentrations to a maximum depth of eight (8) feet.

Although all visible waste was removed during the interim waste removal project, additional sampling was conducted during the RI to determine if residual contamination remained in the soil.

Additional surface and subsurface soil samples were collected during the three phases of RI field work to more thoroughly assess the nature and extent of Site contamination. A total of 50 surface soil samples were collected from 46 locations on site and from four background locations situated to the west of the Site. A total of 80 subsurface soil samples were collected from 20 soil boring locations. The soil borings ranged from 6.5 to 12.4 feet deep. Figure 5-1 indicates locations of surface and subsurface soil sampling locations.

Based on past Site activities, it is not surprising that lead is a widespread soil contaminant. In surface soil samples, lead concentrations ranged from below the detection limit of 6 mg/kg in several samples to 260,000 mg/kg in sample SG-43. In general, lead concentrations decreased with depth. With one exception, sample BH-7, no lead concentrations in excess of 500 mg/kg were present below a depth of 4 feet. Samples collected on all four sides of sample BH-7 contained less than 100 mg/kg lead at depths greater than 2 feet, suggesting that elevated lead concentrations at depths greater than 2 feet were restricted to the area immediately adjacent to BH-7. Two other lead subsurface "hot spots" were located at BH-4 and BH-5. At BH-4, lead was present at concentrations of up to 26,500 mg/kg (2-4 feet), and at BH-8, the maximum concentration was 4,290 mg/kg. Not only was contaminated soil found within fenced portions of the Site, but an area south and east of the fenced perimeter also showed slightly elevated (but less than 800 mg/kg) lead concentrations in the surface soil. Background lead concentrations (determined from samples BG-1, BG-2, BG-3, and BG-4) ranged from 19.1 to 78.6 mg/kg.

Surface soils at the Site exhibited slightly elevated cadmium concentrations (greater than 40 mg/kg) at only one location, SG-15. Three cadmium hot spots (i.e., concentrations exceeding 40 mg/kg) were identified in subsurface soils, and all three were within the boundaries of the former waste piles. Sample BH-14 contained cadmium at concentrations up to 45.1 mg/kg. Samples BH-4 and BH-8 contained cadmium concentrations of 170 and 362 mg/kg, respectively. Background cadmium ranged from 0.46 to 0.64 mg/kg.

Four areas of elevated antimony concentration were identified in Site surface soils. Three of the four areas were within the boundaries of the former waste piles. No subsurface soil samples contained antimony at concentrations greater than 30 mg/kg. Concentrations of antimony ranged from below the detection limit of 2.3 mg/kg to 330 mg/kg in sample SG-21. Background antimony concentrations ranged from the detection limit to 5.2 mg/kg.

In surface soil, arsenic was detected above 80 mg/kg in only one location, SG-15, where a concentration of 285 mg/kg was recorded. This location was also a hot spot for cadmium. Elevated levels of arsenic were present in only one subsurface soil sample, BH-4, at a depth of 0-2 feet. Since BH-4 is located only 20 feet west of SG-15, it appears that the two samples represent the same hot spot. Arsenic concentrations in background samples ranged from 3.2 to 6.4 mg/kg.

Beryllium was detected in surface soil in every sample collected. Concentrations ranged from 0.4 mg/kg in background sample BG-01 to 9.1 mg/kg in SG-09. Likewise, beryllium was present in elevated concentrations in most of the subsurface soil samples, ranging from 0.15 mg/kg in several sample locations to 11.3 mg/kg in BH-10. The wide spread presence of elevated beryllium concentrations below 2 mg/kg does not seem to be related to past or present waste disposal activities at the Site. Sediment data collected in Polk County as part of the National Uranium Resource Evaluation (NURE) program, in addition to site background sampling data, indicates that elevated beryllium concentrations are present throughout the Cedartown area.

The primary soil contaminants identified as associated with the Cedartown Industries Site were the presence of high levels of metals (antimony, arsenic, beryllium, cadmium, chromium, and lead) in surface and subsurface soils. Table 5-2 show the concentration levels of substances detected and utilized for the Baseline Risk Assessment (BRA) potential contaminants of concern in surface and sub-surface soils.

5.3.2 SUBSTANCES DETECTED IN THE GROUNDWATER

To investigate the quality of groundwater beneath the Site, shallow and deep groundwater monitoring wells were installed in the surficial and bedrock aquifer units to monitor the water bearing zones. Shallow wells were installed to monitor water quality in the unconsolidated portion of the aquifer. In addition to the shallow wells, one deep bedrock well was installed during each of the first two RI phases, and two bedrock monitoring wells were installed during phase III. The

purpose of these deep wells was to assess the character of the deeper bedrock groundwater and to assess whether the Site has impacted this groundwater. Deep wells were also installed to determine any interconnection between the surficial and bedrock units, since an objective of the RI was to assess the potential impact of the Site on the drinking water supply (Cedar Spring) for the City of Cedartown.

Results indicated that with the exception of one shallow well, groundwater quality has not been affected by the Site. The effective absence of measurable COCs above their respective maximum concentration level in all but one well in the surficial unit and upper bedrock unit indicates that a slight quantity of metals have leached into these units and should not significantly impact Cedar Springs, Cedartown's source of drinking water. Furthermore, the upward gradient from the bedrock unit to the unconsolidated sediments indicates that if groundwater does move from one zone to the other it would be upward from the bedrock to the overburden, naturally protecting the water quality in the bedrock. A shallow well located between the Site and Cedar Spring, displayed no concentrations of metals. In addition, the surveyed elevation of Cedar Spring is higher than the groundwater elevation at the Site. The results of the RI therefore indicate that the Site does not currently threaten the water quality of Cedar Spring. While groundwater from the Site discharges to Cedar Creek through the surficial unit, based on the sampling analysis, Cedar Creek appears not to have been impacted by the Site.

Although sampling of the upper bedrock unit of the aquifer did reveal detectable concentrations of various contaminants, the concentrations were well below Maximum Concentration Levels (MCLs) and Applicable and Relevant and Appropriate Regulations (ARARs). Sampling data from the lower bedrock unit indicate that contaminated soils and waste have not impacted this portion of the aquifer.

The data collected during phase I and phase II sampling suggested that the surficial unit has been impacted by various heavy metals. However, phase III sampling, which included a resampling of all phase I and II wells, detected elevated concentrations of metals in only one well MW-4. The lack of elevated concentrations of constituents reported during phase III sampling may be attributed to sampling methods from phases I and II to phase III. Sampling from the top of the water column and the use of a peristaltic pump and low flow purging and sampling techniques during phase III appears to have eliminated suspended particulates in the groundwater and provided a more representative indication of groundwater concentrations of metals and other constituents. Thus, results of phase III sampling indicate that past waste management practices at the Site have only adversely impacted the surficial aquifer unit as evidenced by elevated metal concentrations with well MW-4 exceeding the MCL for cadmium. See Figure 5-1 for locations of monitoring wells.

Phase I sampling indicated that lead was present in all monitoring wells at concentrations greater than the Safe Drinking Water Act Action Level of 0.015 milligrams per liter (mg/l). During phase II sampling lead concentrations ranged from a low of 0.002 mg/l in well MW-IC to a high of 0.127 mg/l in MW-7.

However, MW-7 was a background well installed on adjacent property (Goldkist). MW-7 was resampled prior to initiating phase III work using a peristaltic pump and low flow techniques, and the results (lead at a concentration of 0.0057 mg/l) indicated that the elevated lead concentration reported in phase II was the result of naturally occurring lead containing particulates suspended in the groundwater sample. With one exception, lead concentrations decreased from phase I to phase II sampling. During phase III, lead concentrations were reported below the detection limit of 0.001 mg/l in all wells sampled, with three exceptions: MW-1, MW-4, and MW-9.

During phase I sampling, cadmium was present above the detection limit of 0.004 mg/l in four out of six wells and was greater than or equal to the MCL of 0.005 mg/l. Phase II sampling indicated that only one well, MW-4, contained cadmium above the analytical detection limit. Phase III sampling lead concentrations and analysis showed only well MW-4 above the detection limit. The cadmium concentration in this well, 0.0206 mg/l, is approximately four times greater than the MCL of 0.005 mg/l.

Phase I sampling revealed that all six wells contained chromium at concentrations above the detection limit but below the MCL of 0.10 mg/l. Phase II sampling showed only one well (MW-2) with slightly elevated chromium levels. Concentrations for the 10 phase II wells sampled ranged from below the limit of detection to 0.153 mg/l in MW-2. Phase III sampling indicated that three surficial wells contained chromium above the detection limit, but below the drinking water standard for chromium.

Elevated beryllium concentrations (i.e. greater than the beryllium MCL of 0.004 mg/l) were reported in three of six wells tested during phase I sampling. Beryllium concentrations were 0.012 mg/l in MW-6, 0.006 mg/l in MW3, and 0.005 mg/l in MW-2. Although the concentration levels were below the MCL, the same three wells contained beryllium above the detection limit during phase II sampling. Concentrations during this phase of sampling ranged from below the detection limit in six wells to a maximum of 0.003 in wells MW-2 and MW-3. During phase III sampling and analysis, no concentrations of beryllium greater than the detection limit were recorded in any monitoring wells.

Table 5-3 show the concentration levels of substances detected and utilized for the Baseline Risk Assessment as potential contaminants of concerning groundwater.

The total estimated volume of contaminated groundwater beneath the Site in the surficial unit is 0.5 million gallons.

5.3.2.1 FATE AND TRANSPORT

Although elevated levels of heavy metals are present in the soil, data indicate with the exception of cadmium in one well, there has been no adverse impact on groundwater. No potable wells are currently located on site. Exposure to contaminated groundwater may result if a drinking water or domestic use water well is installed in a water bearing zone which is known to be contaminated. The cadmium contamination in this one well appears to be confined to the Site and only in the upper aquifer. Because the groundwater is flowing towards Cedar Creek, there is a mechanism for contaminant migration to surface water (Cedar Creek) and sediments. However, data and modeling indicate that the contamination level attenuates to below Georgia Water Quality Standard prior to reaching the creek. Modeling shows attenuation to this standard occurs 130 feet from this well which is located 342 feet from Cedar Creek.

5.3.3 SURFACE WATER AND SEDIMENTS INVESTIGATION

Analytical data collected from the RI indicates that surface water and sediments have not been adversely impacted by contaminants on the Site.

Water and sediment samples were collected from Cedar Creek at three locations during phase I of the RI. Water samples were collected at five locations, and sediments were collected at nine locations during phase III of the RI better determine contaminant concentrations in sediments as indicated in Figure 5-1.

During phase I sampling of surface water, lead was reported above the detection limit of 0.001 mg/l at 0.0012 and 0.0016 mg/l in only two samples. During phase III water sampling, lead was reported above the detection limit in four of five surface water samples ranging from 0.0015 mg/l to 0.0021 mg/l. One semi-volatile compound, bis(2-ethylhexyl)phthalate was detected in surface water samples, including the background sample. Concentrations ranged from 0.037 mg/l to 0.19 mg/l (background). All reported concentrations of all contaminants were below their respective Georgia Water Quality Standard.

Phase I and phase III sediment samples revealed lead concentrations ranged from 17.3 mg/kg to

51.2 mg/kg. Sediment background samples for lead ranged from 19.5 to 35.9 mg/kg. Phase III sediment samples were above the National Oceanic and Atmospheric Administration Effects Range-Low (NOAA ER-L) concentration of 35 mg/kg. NOAA defines ER-L values as the concentrations equivalent to the lower 10 percentile of screened available data at which effects were observed or predicted among sensitive aquatic biota. Beryllium was detected in phase III sediment samples; however, these concentrations were all within the documented background based on soil site specific data and from the NURE (National Uranium Resource Evaluation) survey of Polk County. Arsenic was detected in samples ranging from 2.10 - 21.7 mg/kg; with a 95% UCL of 17.0 mg/kg; however, the Site specific background was 12.1 mg/kg.

In order to assess the benthic fauna characteristics of Cedar Creek, a benthic macroinvertebrate sampling and survey was conducted. The survey was conducted as a Rapid Bioassessment Protocol III. Because macroinvertebrate are found in all aquatic habitats, are less mobile than most groups of aquatic organisms, and have a relatively long periods of development in aquatic environments, macroinvertebrates are indicative of the health of a stream. The results of a conducted benthic macroinvertebrate study concluded that fair conditions predominate the aquatic environment.

5.3.4 AIR PATHWAY INVESTIGATION

Air is a potential route for migration of contaminants through airborne contaminated dust and soil. Since the waste and most contaminated soils were removed, and a majority of the Site has been paved or covered with clean soil and/or crushed stone, the potential for air transport is low.

6.0 SUMMARY OF SITE RISKS

CERCLA directs EPA to conduct a Baseline Risk Assessment (BRA) to determine whether a Superfund Site poses a current or potential threat to human health and the environment in the absence of any remedial action. The baseline risk assessment provides the basis for determining whether or not remedial action is necessary and the justification for performing remedial action.

6.1 CONTAMINANTS OF CONCERN (COCs)

The chemicals measured in the various environmental media during the RI were evaluated for inclusion as chemicals of potential concern in the risk assessment by application of screening criteria. The criteria which resulted in elimination of chemicals included:

- Site contaminant concentrations below background concentrations;

- measurements below quantification limits; quantitive data on risks including combination of low toxicity and low concentration and low concentration and low frequency of detection; and

- the degree in which one chemical may substitute for a class of related chemicals based on toxicological similarity.

As a result of applying the above listed criteria, Table 6-1 lists the potential contaminants of concern associated with the Cedartown Industries Site and selected as a basis for performing the BRA. The chemicals listed in Table 6-1 are of greatest concern because of their toxicity, their relation to background concentrations, their prevalence on site, and the likelihood of human exposure.

6.2 EXPOSURE ASSESSMENT

Whether a chemical is actually a concern to human health and the environment depends upon the likelihood of exposure, i.e. whether the exposure pathway is currently complete or could be complete in the future. A complete exposure pathway (a sequence of events leading to contact with a chemical) is defined by the following four elements:

- A source and mechanism of release from the source;

- a transport medium (e.g., surface water, air) and mechanisms of migration through the medium;

- the presence or potential presence of a receptor at the exposure point; and

- a route of exposure (ingestion, inhalation, dermal absorption).

If all four elements are present, the pathway is considered complete.

The four major constituent release and transport mechanisms potentially associated with the Site are as follows:

- The infiltration of precipitation through the affected soils and the percolation of the resulting leachate into the shallow groundwater, followed by groundwater transport;

- release of affected surface soil through wind erosion and fugitive dust generation. Surface soils could be suspended in air and transported from their source by the wind;

- contaminated soil from the source areas desorbing into other soils; and

- release of affected surface soil through surface water run-off and groundwater seepage.

Because the ground cover (gravel and pavement) present at the Site will impede wind erosion, exposure to constituents in air, as dust, is not considered significant at the Site under current land use conditions.

An evaluation was undertaken of all potential exposure pathways which could connect chemical sources at the Site with potential receptors. All possible pathways were first hypothesized and evaluated for completeness using the above criteria. Seven current potentially complete exposure pathways and eight future exposure pathways remained after screening. The current pathways represent exposure pathways which could exist under current Site conditions while the future pathways represent exposure pathways which could exist, in the future, if the current exposure conditions change. While the Cedartown Industries Site is currently being utilized as a truck parking area, it is located nearby to residentially zones properties. Therefore, residential exposures were evaluated to be protective of possible residential development. Exposure by each of these pathways was mathematically modeled using generally conservative assumptions.

The current pathways are:

- Potential ingestion and dermal exposure of soils and sediments by a trespasser;

- potential inhalation of particulate chemicals in air by a trespasser;

- potential inhalation of vapor phase chemicals from soil by a trespasser;

- potential inhalation of particulate chemicals in air by workers;

- potential inhalation of vapor phase chemicals from soil by workers;
- potential ingestion and dermal exposure of soils and sediments by workers; and
- potential ingestion of sediments and surface water by terrestrial and aquatic biota.

The future pathways are:

- Potential ingestion and dermal exposure of soils and sediments by residents;
- potential inhalation of particulate chemicals in air by residents;
- potential inhalation of vapor phase chemicals from soil by residents;
- potential ingestion inhalation exposure to groundwater by residents;
- potential inhalation of particulate chemicals in air by workers;
- potential inhalation of vapor phase chemicals from soil by workers;
- potential ingestion and dermal exposure of soils and sediments by workers; and
- potential ingestion exposure to groundwater by workers.

The exposure point concentrations for each of the chemicals of concern and the exposure assumptions for each pathway were used to estimate the chronic daily intakes for the potentially complete pathways, with the exception of the groundwater pathway. The chronic daily intakes were then used in conjunction with cancer potency factors and non-carcinogenic reference doses to evaluate risk.

The reasonable maximum exposure (RME) was used to develop exposures at this Site. In this assessment, the 95% upper confidence chemical concentrations were used for exposure. For soil exposures by inhalation and oral routes, it was assumed that chemicals by these routes were completely absorbed.

The major assumptions about exposure frequency and duration that were included in the exposure assessment were:

- The most likely trespasser is a child;
- the trespasser will spend equal time on all areas of the Site;
- the trespasser will visit the Site 80 days/year for nine years (age 6-14);
- the average body weight of the trespasser is 35 kg;
- the resident will spend 350 days per year on site;
- the resident child lives on the Site for a seven year period and resident adult lives on the Site for 30 years;
- the average weight of the child and adult is 16 kg and 70 kg, respectively;
- the individual expected to have the highest exposure under a commercial-use scenario is a

worker;

- the worker's weight is assumed to be 70 kg;

- the worker's exposure period is estimated to be 25 years; and

- the worker's exposure frequency is anticipated to be 250 days per year.

The baseline risk assessment considered three land use scenarios without the added protection of any remedial action: current land use, future commercial land use, and future residential land use.

6.3 TOXICITY ASSESSMENT

Toxicity values are used in conjunction with the results of the exposure assessment to characterize Site risk. EPA has developed critical toxicity values for carcinogens and non-carcinogens. Cancer potency factors (CPFs) have been developed for estimating excess lifetime cancer risks associated with exposure to potentially carcinogenic chemicals. CPFs, which are expressed in units of (mg/kg/day)[-1], are multiplied by the estimated intake of a potential carcinogen, in mg/kg/day, to provide an upper-bound estimate of the excess lifetime cancer risk associated with exposure at that intake level. The term "upper bound" reflects the conservative estimate of the risks calculated from the CPF. Use of this conservative approach makes underestimation of the actual cancer risk highly unlikely. Cancer potency factors are derived from the results of human epidemiological studies or chronic animal bioassays to which animal-to-human extrapolation and uncertainty factors have been applied.

Reference doses (RfDs) have been developed by EPA for indicating the potential for adverse health effects from exposure to chemicals exhibiting non-carcinogenic effects. RfDs, which are expressed in units of mg/kg/day, are estimates of lifetime daily exposure levels for humans, including sensitive individuals. Estimated intakes of chemicals from environmental media can be compared to the RfD. RfDs are derived from human epidemiological studies or animal studies to which uncertainty factors have been applied (e.g., to account for the use of animal data to predict effects on humans). These uncertainty factors help ensure that the RfDs will not underestimate the potential for adverse non-carcinogenic effects to occur. Exposure point concentrations, CPFs and RfDs for the COCs exceeding acceptable risk levels are shown in Table 6-2.

6.4 RISK CHARACTERIZATION

Human health risks are characterized for potential carcinogenic and non-carcinogenic effects by combining exposure and toxicity information. Excessive lifetime cancer risks are determined by multiplying the estimated daily intake level with the cancer potency factor. These risks are probabilities that are generally expressed in scientific notation (e.g., 1x10[-6]). An excess lifetime cancer risk of 1x10[-6] indicates that, as a plausible upper boundary, an individual has a one in one million additional (above their normal risk) chance of developing cancer as a result of Site-related exposure to a carcinogen over a 70-year lifetime under the assumed specific exposure conditions at a Site.

EPA considers individual excess cancer risks in the range of 1x10[4] to 1x10[-6] as protective; however, the 1x10[-6] risk level is generally used as the point of departure for setting cleanup levels at Superfund Sites. The point of departure risk level of 1x10[-6] expresses EPA's preference for remedial actions that result in risks at the more protective end of the risk range. The health-based risk levels for this Site are shown in Table 6-3.

Potential concern for non-carcinogenic effects of a single contaminant in a single medium is expressed as the hazard quotient (HQ) (or the ratio of the estimated intake derived from the contaminant concentration in a given medium to the contaminants's reference dose). A HQ which exceeds one (1) indicates that the daily intake from a scenario exceeds the chemical's reference dose. By adding the HQs for all contaminants within a medium or across all media to which a given population may reasonably be exposed, the Hazard Index (HI) can be generated. The HI provides a useful reference point for gauging the potential significance of multiple contaminant exposures within a single medium or across media. An HI which exceeds unity indicates that there may be a concern for potential health effects resulting from the cumulative exposure to multiple contaminants within a single medium or across media. The HIs are shown in Table 6-3.

6.5 UNCERTAINTY ANALYSIS

The following areas of uncertainty were associated with the estimation of chemical uptake from exposure to Soils and groundwater:

1. Use of concentrations at or near method detection limit and estimated concentrations below the detection limit to determine exposure point concentrations.

2. Selected frequencies of human contact with soil and groundwater.

3. Exposure variables used to estimate oral, dermal, and inhalation intakes.

The following are uncertainties associated with estimation of risks:

1. Risks calculated from slope factors derived using the linearized multistage procedure, are likely conservative upper bound estimates. The actual risks are likely much lower.

2. Uncertainty on whether regarding at what level lead should be considered at which adverse toxicological effects do not occur based on applying the IU/BK model

6.6 HUMAN HEALTH RISKS CONCLUSION

TRESPASSER

The hazard index associated with exposure to chemicals in surface soils was 2. The hazard index value for sediment exposure was 3E[-01]. The total non-cancer hazard for the trespasser, 2, suggests that an inadequate margin of safety may exist as a result of the combined exposure to the Site chemicals in surface soils.

WORKER

Cancer risks were calculated to range from a low of 2E[-05] to a high of 4E[-05] for exposure to subsurface and surface soil, respectively. The largest calculated non-cancer hazard index for workers, 4, was associated with groundwater exposure. As in the case for the Site trespasser, risks and hazards were attributed primarily to exposure to the metals arsenic and beryllium. The non-cancer hazard for this population was primarily due to manganese.

FUTURE ADULT AND CHILD RESIDENT

Risks ranged from 2E[-05] to 1E[-04] for exposure to Site groundwater and surface soil, respectively. Hazard indices for this population ranged from 2 (subsurface soil exposure) to 17 (surface soil exposure). For adult residents, cancer risks ranged from 5E[-05] (groundwater exposure) to 1E[-04] (surface soil exposure). The highest hazard index for this group, 6, was associated with exposure to surface soil.

Concerns for cancer risks and non-cancer hazards which exceed values considered acceptable by the USEPA can be lessened by the following considerations:

- Surface soil lead contamination was widespread on the Site and clean-up of the lead concentrations to an acceptable level will probably reduce any other soil contaminants at the Site to acceptable concentrations. It is likely and must be confirmed with sampling during the remedial design that cleanup of lead contamination will lower risks and hazards of other contaminants (e.g., antimony, arsenic, and beryllium--the constituents contributing greatest to soil risks and hazards) to acceptable levels, an examination of sample locations which contain high (> 500 ppm) soil lead levels indicates that high concentrations of other chemicals are found in these locations. Thus, the removal of lead contamination from these areas will affect cleanup of other contaminants which coexist with lead, and thus lower the risks and hazards associated with these contaminants to protective levels.

- The cancer risks and non-cancer hazard values presented in the BRA represent RME exposure conditions which may not be applicable to persons potentially contacting Site chemicals. In some instances, total risks for trespasser, worker, and resident populations were determined by summing the RME risks from a number of exposure pathways.

6.7 ENVIRONMENTAL ASSESSMENT SUMMARY

6.7.1 AQUATIC

Although contaminants may migrate to the creek through several pathways including both surface runoff and groundwater discharge, sampling indicates the water quality of Cedar Creek has not been impacted. Although creek sediments displayed some elevated metal concentrations adjacent to the Site, NOAA ER-L levels were not exceeded except for lead. For lead, the 95% UCL sediment concentration found was 38 mg/kg. The NOAA ER-L for lead is 35 mg/kg. Since the UCL concentration is not appreciably greater than the NOAA ER-L concentration and the results of a conducted benthic macroinvertebrate study concluded that fair conditions predominate the aquatic environment, the Site has not adversely affected and has a limited potential for adverse effects on aquatic populations.

6.7.2 TERRESTRIAL

The Georgia Fish and Wildlife Service provided the following list of federally endangered species:

Red-Cockaded Woodpecker
Bald Eagle
Eastern Cougar
Gray Bat

The Georgia Department of Natural Resources indicated the redcockaded woodpecker would not locate near the Site because pine trees are relatively young, and this bird inhabits old growth pines. The bald eagle and eastern cougar would not be found in this area due to urbanization/ industrialization. The nearest cave which hosts the gray bat is over 30 miles from the Site. Since the typical range of the gray bat is a few miles, it is unlikely that the Site would impact this species.

The U.S. Fish and Wildlife indicted the following plants are protected:

Yellow Lady's Slipper
False Hellebore

While both species are native to Northwest Georgia, they are only found in undisturbed, old growth forests. This habitat does not exist on or near the Site.

The Cedartown Industries Site is located in an industrial/urban setting. This Site has been developed for over 100 years, consequently there are no sensitive terrestrial ecosystems at or near the Site that would be affected by the Site.

6.8 CHEMICALS OF CONCERN AND CLEANUP LEVELS

The establishment of health-based cleanup goals serves as an important means of guiding remedial activities. A health-based approach is warranted when cleanup standards promulgated by state or federal agencies are not available for contaminants in soil, as well as for certain groundwater contaminants. The approach to developing health-based goals is derived from the risk assessment process. The risk assessment is essentially a process by which the magnitude of potential cancer risks and other health effects at a Site can be evaluated quantitatively. A cleanup goal is established by back-calculating a health protective contaminant concentration, given a target cancer risk which is deemed acceptable and realistic. The concept of the cleanup goal inherently incorporates the concept of exposure reduction which allows remedial alternatives to be flexible. The BRA indicate that the media of concern are groundwater and, surface and subsurface soils. The resulting COCs used for establishing remedial action goals or clean up levels, established from health-based risks exceeding carcinogenic at $1X10^{-6}$ or HI of 1 and calculated health-based clean up levels, are summarized in Table 6-4.

The shallow groundwater beneath the Site exhibits elevated levels of one metal constituent (cadmium) in only one well (MW-4). Because elevated levels of cadmium appear to exist only in the area immediately adjacent to MW-4, there appear to be no potential receptors to the contaminated groundwater. The BRA included ingestion exposure to groundwater as unlikely for the worker and resident populations in the exposure pathway analysis. In addition, groundwater in the bedrock unit is not considered to be a risk to human receptors either at the Site or through upgradient migration to Cedar Spring. Analytical data indicate that the surface water and sediment have not been impacted by the Site. Therefore, the groundwater should be monitored to ensure that the localized groundwater contamination is naturally attenuating and is not migrating.

Because present levels of constituents in the soil have not significantly impacted the groundwater, both surface and subsurface soil cleanup levels should focus on removing any risk to potential receptors. Site specific data indicate that a cleanup level protective of human health would also be protective of groundwater. Because lead concentrations in isolated areas in the soil as high as 260,000 mg/kg have not impacted the groundwater, a health-based clean up level of 500 mg/kg for lead would be protective of the groundwater as well as human health. With one exception (naturally occurring beryllium), removal or treatment of the soil with lead concentrations above 500 mg/kg will reduce other soil contaminants at the Site to acceptable levels.

Remedial Action goals or cleanup levels consist of specific goals for the protection of Human Health and the Environment. The remediation goals were based on COCs and their allowable exposure levels and chemical specific ARARs. Chemical specific ARARs include maximum contaminant levels (MCLs) established for drinking water and federal action levels proposed for corrective actions at RCRA solid waste management units. MCLs and federal soil action levels are set by EPA and are based on a level that at which no known or anticipated adverse effect on the health of persons occur and which allows an adequate margin of safety. The clean up goals established in Table 6-5, graphically represented in Figures 6-1 for soils and 6-2 for groundwater are based on MCLs and federal soil action levels. These goals were developed based on health-based criteria and are considered conservative for the protection of human health. Field sampling during the remedial stage will be used to guide the actual area to be remediated.

Actual or threatened releases of hazardous substances from the Cedartown Industries Site, if not addressed by implementing the response action selected in this Record of Decision (ROD), may present an imminent and substantial endangerment to public health, welfare, or the environment.

7.0 DESCRIPTION OF ALTERNATIVES

The Feasibility Study Report evaluated possible alternatives for remediation of conditions at the Cedartown Industries Site. A total of six (6) alternatives have been established for detailed analysis consideration. These alternatives were selected to provide a range of remedial actions for the Cedartown Industries Site.

7.1 ALTERNATIVE No. 1 - No Action

The no action alternative is carried through the screening process as required by the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This alternative is used as a baseline for comparison with other developed alternatives. EPA would not take further action to minimize the impact of contamination. The no-action alternative would result in no disturbance of existing contaminated soils and no remediation of contaminated groundwater. Contaminants in the soil would continue to pose a threat to human health and the environment and leach into the groundwater. The overall remedial action levels would not be achieved by utilizing this alternative and all current and potential future risks would remain under this alternative. This alternative does not provide for a reduction in toxicity, mobility, or volume of the contaminated soil. The no-action alternative would involve groundwater monitoring. However, installation of additional monitoring wells to monitor the movement of the contaminant plume would not be necessary.

Alternative 1 provides minimal control of exposure to the contaminated soil and no reduction in risk to human health posed through the groundwater.

The 30-year present worth cost of this alternative is estimated to be $324,860, with a capital cost of $0.00 and an annual O&M cost of $23,600. The associated costs are the annual O&M costs are for the groundwater monitoring program.

7.2 ALTERNATIVE No. 2 - Ex-Situ Solidification/Stabilization; Groundwater Monitoring

This alternative includes ex-situ (excavating or digging to treat) soil fixation of lead-contaminated soil which exceeds 500 mg/kg or parts per million (ppm), coupled with cleanup of cadmium-contaminated groundwater to the drinking water standard of 5 g/l (0.005 mg/l) through natural attenuation. Cadmium is the only groundwater contaminant detected above standards and appears to be confined to one area in the surficial unit of the aquifer. Monitoring of cadmium at four existing downgradient (in the direction of groundwater flow) wells and one existing upgradient well would be accomplished on a quarterly basis.

Once the source is immobilized through ex-situ solidification/stabilization, the cadmium-contaminated groundwater is expected to naturally attenuate in approximately two years. Groundwater monitoring of soil COCs, including lead, shall be conducted during the post-cleanup period to verify that the solidified material does not release COCs to the groundwater. If the groundwater monitoring indicates that cadmium levels increase during two consecutive quarters of sampling, that after three years, natural attenuation has failed to achieve the cleanup standard of 5 ug/l (0.005 mg/l), or that other soil released COCs exceed their respective MCLs, EPA shall consider and determine the requirement to initiate a pump and treat system as described in Alternative No. 5.

The area to be solidified/stabilized was identified by comparing data for soil with criteria for COCs for each medium (soil and groundwater). Lead was chosen as the indicator chemical because the areas of lead contamination, both vertical and horizontal, encompassed those areas in which other contaminants were identified. Thus, treatment of the lead-contaminated soil would result in treatment of the other contaminants, as well. The soil remedial action target concentrations shall be used to determine the vertical and horizontal excavation boundaries for contaminated soil. A sampling program would be conducted to determine the actual volumes of surface soil and subsurface soil requiring remedial action. Based on the excavation performance standard of 500 mg/kg, the volume of contaminated soil to be solidified is approximately 19,280 cu yds. Prior to excavation of contaminated subsurface soils, any clean backfill would be excavated and stockpiled on site for reuse after the solidification/stabilization process has been completed.

Prior to designing the final ex-situ solidification/stabilization system, additional bench and pilot-scale treatability studies or testing would be required to verify the effectiveness of the process optimization parameters and attainment of the performance standards. Process optimization parameters include, but are not limited to, selection of stabilizing agents and other additives, the waste-to-additive ratio, mixing and curing conditions, and availability of reagents and vendors. Performance standards include, but are not limited to, TCLP, unconfined compressive strength, permeability, and leachability. Testing of the solidified soils would be necessary to ensure that performance requirements are being met.

With the exception of underground utilities, there would be no internal Site restrictions or logistic problems that would impact use of this technology. Excavation may be accomplished with or without the removal of buildings or structures in areas requiring excavation. Currently, there is no evidence that contamination exists under the buildings. However, if contamination is found during the remedial design, appropriate action involving demolition of impacted structures may be undertaken.

Upon contaminated and treated soils meeting treatment performance standards and having been rendered nonhazardous, i.e. the soils meet the toxicity characteristics regulatory levels, it would be disposed on site. The excavated areas would be backfilled with the solidified material and clean compacted cover. The excavated areas would be regraded and regraveled or revegetated to existing conditions.

Institutional controls for land use and groundwater use restrictions will be implemented.

The 30-year present worth cost of this alternative is estimated to be $3,372,180. The primary cost item is the soil fixation. The capital cost is estimated to be $2,931,700 with an annual O&M cost of $32,000.

If the contingency groundwater remedy is implemented, the 30-year present worth cost is estimated to be $4,923,700 with a projected $3,188,075 for capital expenditures, a $1,551,520 increase in capitol and O&M costs. For cost estimation, it was assumed pre-treatment would not be necessary. The annual O&M cost is estimated to be $192,000 for the groundwater extraction and treatment system, Site maintenance, and groundwater monitoring for 5 years. Groundwater monitoring and Site maintenance annual O&M costs are estimated at $32,000 for the remaining 25 years.

7.3 ALTERNATIVE No. 3 - Soil Excavation with Off-Site Disposal; Groundwater Monitoring

In this alternative, all lead-contaminated soils exceeding 500 ppm would be excavated and taken to an off-Site regulated landfill for disposal. The excavated areas would be filled in with clean soil, then regraded and regraveled or revegetated. Concurrently, cleanup of the cadmium-contaminated groundwater would take place by natural attenuation as described in Alternative No. 2.

The area and volumes to be excavated would be the same as ex-situ solidification/stabilization described in Alternative No. 2. Excavation of contaminated soils would be done in a way to minimize contact by the trucks with contamination, thus preventing spreading onto local roadways. Earth moving equipment would be used to excavate the soils and the primary transport vehicle would be 20-yard dump trailers with tarpaulin covers, liners, and adsorbents, as necessary. Equipment for waste removal would be decontaminated on site. Wash water would be captured and transported to an approved off-Site water treatment system. The soils would then be transported directly to the disposal facility. The excavated areas would be backfilled with clean fill, then regraded and regraveled or revegetated. Disposal of contaminated materials would take place at an approved RCRA-permitted hazardous waste facility.

Excavation may be accomplished with or without the removal of buildings or structures in areas requiring excavation. Currently, there is no evidence that contamination exists under the buildings. However, if contamination is found during the remedial design appropriate action involving demolition of impacted structures may be undertaken.

Assuming each vehicle would transport 20 tons of unconsolidated material, approximately 1250 loads would be shipped off-site. The 30-year present worth cost of this alternative is estimated to be $9,594,060 with a capital cost of $9,153,580 and an annual O&M cost of $32,000. The capital cost is for excavation and disposal of the contaminated soil. The annual O&M costs are for the groundwater monitoring program.

7.4 ALTERNATIVE No. 4 - Capping; Groundwater Monitoring

The primary components of No. 4 are capping of the lead contaminated soils which exceed 500 ppm and cleanup of the cadmium-contaminated groundwater through natural attenuation. Monitoring for both soil and groundwater COCs is described in Alternative No. 2.

Capping would consist of two primary activities: (1) excavation and relocation of contaminated surface soils from outside the fence line to within the fenced area of the property; and (2) construction of a multimedia cap to inhibit rain or storm water from entering the underlying soils. A 12 -inch thick vegetated layer would subsequently be constructed to the original ground elevations across all off-Site disturbed areas. Initial activities would consist of digging up about 2,420 cu yd of off-Site material from three locations totaling approximately 1.5 acres in surface area extent.

Three separate cap systems would be used under this alternative based upon existing Site activities -- clay and asphalt pavement over 2.6 acres; clay and concrete pavement over 0.5 acres; and clay and a flexible synthetic membrane over the rest (0.5 acres).

Clay and Asphalt Cap

In areas of the Site currently utilized for truck-parking, the proposed cap would consist of a 24-inch think clay layer re-compacted to a maximum saturated hydraulic conductivity of 1 x 10[-7] cm/s. Overlaying the clay barrier would be a minimum 8-inch thick layer of asphalt pavement with a 6-inch stone base. It is estimated that the asphalt/clay cap would be utilized over approximately 2.6 acres of the Site.

Clay and Concrete Cap

In areas currently utilized for trailer parking, the 24-inch thick clay barrier would be overlain by a minimum 6-inch thick layer of concrete pavement with a 4-inch stone base. It is estimated that the concrete pavement/clay cap would be utilized over approximately 0.5 acres of the Site.

Synthetic Layer

The remaining portion of the Site, at which contamination exceeding the clean up level of 500 ppm lead would be capped with a 24-inch thick barrier clay layer overlain by a 20-mil flexible membrane liner.

Surface water would be transported away from the cap via construction of a 12-inch thick sand drainage layer over the liner. The drainage layer would be overlain by a 24-inch thick vegetated layer. It is estimated that the vegetated cap would be utilized over approximately 0.5 acres of the Site. Additional geologic analyses may be required during the remedial design to determine subsurface soil conditions relative to cap design.

Additional cap protection may not be required at the location of the existing structures. However, in order to maintain access to existing structures, excavation of the upper 3-5 feet of existing materials and replacement with proposed cap materials would be required adjacent to the structures. Excavation of the existing soils and regrading of the area, prior to cap construction, would be required to divert storm water runoff around the structures. Excavated materials would be spread and compacted in the areas of the proposed cap construction to prevent ponding and promote drainage across the Site. The cap could be enlarged if more contamination were discovered during remedial design activities. The reliability of the cap will require regular maintenance. Maintenance would include, but not be limited to, regular asphalt, concrete crack, and erosion repair.

This alternative would provide no reduction in the toxicity or volume of contaminated soil or groundwater through treatment. The 19,280 cu yds of contaminated soil would remain on site within the fenced perimeter.

The 30-year present worth cost of this alternative is estimated to be $1,136,540, with a capital cost of $438,655. The capital cost is primarily for the installation of the cap. The annual O&M costs of $50,700 are primarily for the groundwater monitoring program and for maintaining the cap.

7.5 ALTERNATIVE No. 5 - Ex-Situ Solidification/Stabilization; Groundwater Treatment

Alternative No. 5 would combine ex-situ solidification/stabilization of the lead-contaminated soils as described in Alternative No. 2 to prevent contaminants from moving into groundwater with treatment of the cadmium-contaminated groundwater found in the uppermost unit of the aquifer. The groundwater contamination, consisting of cadmium levels greater than the cleanup level of 5.0 g/1 (0.005 mg/1), has an approximate area of 22,500 square feet (ft[2]). The thickness of the surficial unit of the aquifer at the affected area is about 9 feet. Assuming an estimated average effective porosity of 0.35. The estimated volume of water to be treated is approximately 0.5 million gallons.

The groundwater extraction system would consist of a group of wells located within the estimated area of the plume designed to intercept the contaminated groundwater and treat the groundwater to remove the contaminants to below the cleanup level or MCL. The pumping system would be designed to provide a capture zone sufficient to intercept the delineated plume would be targeted for removal.

The effectiveness of the groundwater extraction system is dependent upon the aquifer characteristics, transmissivity, and storativity. Typically, these design criteria are developed by aquifer testing based on constant discharge pumping and/or recovery tests. Since extensive aquifer testing has not been completed, additional pump tests and groundwater modeling will be required during the remedial design. Based on conservative design criteria to be confirmed during the remedial design, transmissivity of 330 g/day/ft and storativity of 0.01, a minimum of 3 wells to a depth of approximately 15 feet would be needed. These wells would be spaced approximately 60 feet apart and located downgradient from MW-4 to intercept the delineated plume and provide a hydraulic barrier against plume migration. Each well would be pumped at an approximate rate of 1 gallon per minute with the total discharge of the extraction system totaling approximately 3 gpm. At this rate, approximately 4,300 gallons would be discharged for treatment per day.

Extracted groundwater concentration of cadmium is anticipated to be lower than the limits (0.3 mg/l) set for discharges to the public sewer system (Cedartown Code 22-64). Therefore, the groundwater may be discharged directly from the extraction system to the city sewer.

If groundwater cannot be discharge to the POTW, a contingency of discharging the contaminated groundwater to surface water after treatment would be required. Groundwater treatment is to be accomplished by ion exchange or reverse osmosis. Both treatment processes are proven technologies and are widely used in industrial treatment. Treatability studies would be needed during remedial design to determine design parameters and procedures. The treated effluent would be discharged to the surface water or shallow groundwater and the system would be designed to meet Federal and State NPDES limitations for discharge to the surface water and/or State Water Quality Standards.

Routine maintenance on the pumps and treatment unit would be required. Operation and maintenance of the extraction and treatment system would require trained personnel. Major components of the groundwater withdrawal and treatment system may need major servicing at 5-year intervals.

The 30-year present worth cost is estimated to be $4,923,700 with a projected $3,809,330 for capital expenditures. For cost estimation, it was assumed pre-treatment would not be necessary. The annual O&M cost is estimated to be $192,000 for the groundwater extraction and treatment system, Site maintenance, and groundwater monitoring for 5 years. Groundwater monitoring and Site maintenance annual O&M costs are estimated at $32,000 for the remaining 25 years.

7.6 ALTERNATIVE No. 6 - Soil Excavation; Groundwater Treatment

Alternative No. 6 contains the excavation component of Alternative No. 3 combined with the groundwater extraction and treatment systems described in Alternative No. 5.

The 30-year present worth cost is estimated to be $11,145,570 with a projected $10,031,200 for capital expenditures. For cost estimation, it was assumed pre-treatment would not be necessary. The annual O&M cost is estimated to be $192,000 for the groundwater extraction and treatment system, Site maintenance, and groundwater monitoring for 5 years. Groundwater monitoring and Site maintenance annual O&M costs are estimated at $32,000 for the remaining 25 years.

7.7 ALTERNATIVE No. 7 - Capping; Groundwater Treatment

Alternative No. 7 contains the capping component of Alternative No. 4 combined with the groundwater extraction and treatment systems described in Alternative No. 5.

The 30-year present worth cost is estimated to be $2,688,040 with a projected $1,136,280 for capital expenditures. For cost estimation, it was assumed pre-treatment would not be necessary. The annual O&M cost is estimated to be $210,700 for the groundwater extraction and treatment system, Site maintenance, and groundwater monitoring for 5 years. Groundwater monitoring and Site maintenance annual O&M costs are estimated at $50,700 for the remaining 25 years.

7.8 APPLICABLE OR RELEVANT AND APPROPRIATE REGULATIONS (ARARs)

The remedial action for the Cedartown Industries Site, under CERCLA Section 121(d), must comply with federal and state environmental laws that are either applicable or relevant and appropriate (ARARs). Applicable requirements are those standards, criteria or limitations promulgated under federal or state law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA Site. Relevant and appropriate requirements are those that, while not applicable, still address problems or situations sufficiently similar to those encountered at the Site and that their use is well suited to the particular Site. To-Be Considered Criteria (TBCs) are non-promulgated advisories and guidance that are not legally binding, but should be considered in determining the necessary level of cleanup for protection of health or the environment. The affected groundwater in the aquifer beneath the Cedartown Industries Site has been classified by EPA as Class IIA. Class IIA groundwater is a source of drinking water. It is EPA's policy that groundwater resources be protected and restored to their beneficial uses. A complete definition for groundwater classification is provided in the Guidelines for Groundwater Classification under the EPA Groundwater Protection Strategy, Final Draft, December 1986.

While TBCs do not have the status of ARARS, EPA's approach to determining if a remedial action is protective of human health and the environment involves consideration of TBCs along with ARARs.

Location-specific ARARs are restrictions placed on the concentration of hazardous substances or the conduct of activities solely on the basis of location. Examples of location-specific ARARs include state and federal requirements to protect floodplains, critical habitats, and wetlands, and solid and hazardous waste facility siting criteria. Table 7-1 summarizes the potential location-specific ARARs for the Cedartown Industries Site.

Action-specific ARARs are technology- or activity-based requirements or limitations on actions taken with respect to hazardous wastes. These requirements are triggered by the particular remedial activities that are selected to accomplish a remedy. Since there are usually several alternative actions for any remedial Site, various requirements can be ARARs. Table 7-2 lists potential action-specific ARARs and TBCs for the selected remedy for the Cedartown Industries Site, and Table 7-3 lists potential action specific ARARs for the contingency remedy for groundwater.

Chemical-specific ARARs are specific numerical quantity restrictions on individually-listed chemicals in specific media. Examples of chemical-specific ARARs include the MCLs specified under the Safe Drinking Water Act as well as the ambient water quality criteria that are enumerated under the Clean Water Act. Since there are usually numerous chemicals of concern for anyremedial Site, various numerical quantity requirements can be ARARs. Table 7-4 lists potential chemical-specific ARARs for the Cedartown Industries Site.

To-Be-Considered Criteria (TBCs) are non-promulgated advisories and guidance that are not legally binding, but should be considered in determining the necessary level of cleanup for protection of health or the environment. TBCs advisories and guidances are listed in Table 7-5.

8.0 SUMMARY OF THE COMPARATIVE ANALYSIS OF ALTERNATIVES

This section of the ROD provides the basis for determining which alternative provides the best balance with respect to the statutory balancing criteria in Section 121 of CERCLA, 42 U.S.C. Section 9621, and in the NCP, 40 CFR, Section 300.430. The major objective of the FS was to develop, screen, and evaluate alternatives for the remediation of the Cedartown Industries Site. A wide variety of alternatives and technologies were identified as candidates to remediate the contamination at the Cedartown Industries Site. These were screened based on their feasibility with respect to the contaminants present and the Site characteristics. After the initial screening, the remaining alternatives/technologies were combined into potential remedial alternatives and evaluated in detail. The remedial alternative was selected from the screening process using the following nine evaluation criteria:

- Overall protection of human health and the environment;
- compliance with applicable and/or relevant Federal or State public health or environmental standards;
- long-term effectiveness and permanence;
- reduction of toxicity, mobility, or volume of hazardous substances or contaminants;
- short-term effectiveness or the impacts a remedy might have on the community, workers, or the environment during the course of implementation;
- implementability, that is, the administrative or technical capacity to carry out the alternative;
- cost-effectiveness considering costs for construction, operation, and maintenance of the alternative over the life of the project, including additional costs should it fail;
- acceptance by the State, and
- acceptance by the Community.

The NCP categorizes the nine criteria into three groups:

(1) Threshold Criteria - overall protection of human health and the environment and compliance with ARARs (or invoking a waiver) are threshold criteria that must be satisfied in order for an alternative to be eligible for selection;

(2) Primary Balancing Criteria - long-term effectiveness and permanence; reduction of toxicity, mobility or volume; short-term effectiveness; implementability and cost are primary balancing factors used to weigh major trade-offs among alternative hazardous waste management strategies; and

(3) Modifying Criteria - state and community acceptance are modifying criteria that are formally taken into account after public comments are received on the proposed plan and incorporated in the ROD.

The selected alternative must meet the threshold criteria and comply with all ARARs or be granted a waiver for compliance with ARARs. Any alternative that does not satisfy both of these requirements is not eligible for selection. The Primary Balancing Criteria are the technical criteria upon which the detailed analysis of alternatives is primarily based. The final two criteria, known as Modifying Criteria, assess the public's and the state agency's acceptance of the alternative. Based on these final two criteria, EPA may modify aspects of a specific alternative.

The following analysis is a summary of the evaluation of alternatives for remediating the Cedartown Industries Superfund Site under each of the criteria. A comparison is made between each of the alternatives for achievement of a specific criterion.

8.1 THRESHOLD CRITERIA

8.1.1 OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

The no-action alternative will not mitigate the risks associated with contamination at or originating from the Cedartown Industries Site. Therefore, this alternative is not protective of human health and the environment and will no longer be considered in this discussion.

Alternatives 2 and 3 (Ex-Situ Solidification/Stabilization and Excavation/Off-Site Disposal, respectively) provide for remediation of soils and groundwater monitoring for protection of human health and the environment. Alternative 4, capping with groundwater monitoring, contains the contaminated soil and would monitor groundwater, but may not allow for the natural attenuation of groundwater contamination. Alternatives 2, 3, and 4, soil ex-situ solidification/stabilization, excavation, and capping respectively, all reduce the risk of direct soil contact and ingestion. Alternatives 5, 6, and 7 combine each of the soil remediation alternatives with groundwater extraction and treatment to prevent potential migration of the contaminated plume.

Alternatives 2, 3, 5, and 6 either treat and/or remove the source of metals contamination, thereby, allowing the shallow groundwater to attain the COCs MCL through natural attenuation or by extraction and treatment. These alternatives protect human health and the environment through restoring the Class IIA aquifer and preventing any potential migration of the contaminated plume. Since there is not a current direct exposure route to groundwater and an increase in contaminant concentrations has not been detected in the receiving stream, groundwater extraction and treatment may not significantly reduce risks to human health or the environment. Therefore, source treatment or removal with groundwater monitoring and natural attenuation of the groundwater contamination is protective. A contingency groundwater remedy of extraction and treatment of groundwater, if natural attenuation is determined ineffective, would be most protective.

Natural attenuation is expected to remediate the cadmium contamination in the groundwater in approximately two years upon treatment or removal of the contaminated soils.

8.1.2 COMPLIANCE WITH ARARS

The only location-specific ARAR applicable to the Site is the Site's location within the floodplain. However, the Site is protected from the 100 -year flood by a levee. All alternatives, except the no-action alternative, will meet all of their respective ARARs.

Groundwater ARARs include Maximum Contaminant Levels (MCLs) that establish chemical-specific limits on certain contaminants in community water systems. Even though the groundwater data suggests that representative concentrations of constituents are above the established MCLs, natural attenuation is expected to achieve MCLs over time upon treatment of the source area. Longterm monitoring is included in alternatives 1, 2, 3, and 4. Additional statistical analysis of data will further substantiate the presence/absence of a groundwater plume. This long-term monitoring will provide the data necessary for a statistical determination of constituent concentrations in groundwater. If, in EPA's sole discretion, it becomes apparent that MCLs will not be met through attenuation, a contingency pump and treat remedy as described in alternative 5 will be considered and at EPA's sole determination be implemented.

For Alternative #2, consolidation of the soils for ex-situ solidification/stabilization treatment of contaminated soils is not expected to require a waiver for the RCRA Land Disposal Restrictions because the treated soils are not expected to exhibit a hazardous waste characteristic. However, characteristic leaching tests shall be performed to confirm this expectation. The remedial action will include further sampling and analysis of groundwater to verify that groundwater beneath the Site will meet ARARs through attenuation in a reasonable time-frame. Surface water on site currently meets ARARs.

For Alternatives 2, 3, 5, and 6, Region IV, Guidance Number TSC-9202, concerning management of contaminated media is a TBC guidance relevant to the application of RCRA to the management of contaminated media and for the protection of Human Health and the Environment. If the medium (soil) is contaminated by constituents identified in 40 CFR 261, Appendix VIII, and exhibits a hazardous waste characteristic, then the contaminated medium must be treated in accordance with RCRA subtitle C requirements until it no longer exhibits the characteristic. Since the medium (soil) on site was contaminated thorough contact with a characteristic waste (Slag Piles) and testing during the RI determined that the media exhibits a hazardous waste characteristic (TCLP), this medium must than be managed, per this guidance, in accordance with RCRA Subtitle C until the medium does not exhibit hazardous waste characteristics upon which best management practices for disposal will apply. Treatment of contaminated medium (soils) through ex-situ solidification/stabilization is expected to remove the hazardous waste characteristic and attain health-based risk levels.

Alternatives 2, 3, 5, and 6 would be able to meet all Federal and State standards for contaminants and proposed actions. Alternatives 4 and 7, capping, may not be able to meet Chemical Specific ARARs for groundwater contamination MCLs since the source of potential groundwater contamination will remain on site or be left untreated. Alternative 1, no action, would not be able to meet ARARs.

8.2 PRIMARY BALANCING CRITERIA

8.2.1 LONG-TERM EFFECTIVENESS AND PERMANENCE

Alternatives 2 and 5 would have the highest degree of long-term effectiveness and permanence because they would use a permanent and reliable treatment process to reduce risks posed by contaminated soils and monitoring for natural attenuation (alternative 2) or groundwater treatment (alternative 5) to protect against risks posed by the contaminated groundwater. Ex-Situ Solidification/Stabilization would reduce the mobility of COCs by more than 95 percent.

Alternatives 3 and 6 would have a high degree of long-term effectiveness since the source material would be excavated and disposed off-site at a regulated landfill. However, long-term liabilities associated with disposal in a secure landfill or treatment facility would exist. Additionally, longterm protection of groundwater would be accomplished through monitoring for natural attenuation (alternative 3) or groundwater treatment (alternative 6) to protect against hazards posed by the contaminated groundwater.

Alternatives 4 and 7 would rely on a cap to contain contaminated soils and control infiltration. Upon completion, long-term monitoring and maintenance would be required for both alternatives. Although capping is an effective and accepted approach for reducing risk from direct contact with wastes, it is less reliable in the long-term than permanent remedies described in alternatives 2, 3, 5 and 6 in which ex-situ solidification/stabilization or offsite disposal are used to treat or remove contaminated soil. The inherent hazard of the COCs would remain on the Site if alternatives 4 and 7 were implemented. Additionally, these alternatives may allow for potential continued exposure and/or migration of COCs to groundwater, and as a result the probability that groundwater contamination would attenuate is reduced.

Alternatives 2, 3, and 4 would incorporate groundwater monitoring while alternatives 5, 6, and 7 would incorporate groundwater extraction and treatment for groundwater protection and remediation. While groundwater treatment appears to be the most expeditious and permanent method for groundwater protection, groundwater modeling indicates that natural attenuation of the groundwater contamination would take approximately 2 years from source treatment or removal versus 1.3 years for groundwater extraction and treatment. Therefore, natural attenuation (alternatives 2, 3 and 4) is nearly as effective as extraction and treatment (alternatives 5, 6, and 7).

Alternatives 2 and 5 would provide the greatest long-term effectiveness and permanence because they use treatment to reduce hazards posed by contaminated soils and monitoring or treatment to protect against future threats from use of the shallow aquifer.

8.2.2 REDUCTION OF TOXICITY, MOBILITY, OR VOLUME THROUGH TREATMENT

Alternatives 2 and 5 use ex-situ solidification/stabilization to reduce the mobility and toxicity of the approximately 19,280 cu yd of contaminated soils and meets the CERCLA preference for treatment rather than containment; however, an increase in volume of material due to the nature of the treatment may occur.

Alternatives 3, 4, 6, and 7 do not utilize any treatment to reduce the toxicity, mobility, or volume of the contaminated soils and do not meet the statutory mandate for treatment.

Alternatives 5, 6, and 7 would treat groundwater contamination to reduce toxicity, volume, and mobility, whereas alternatives 2, 3, and 4 would utilize natural attenuation of the groundwater to reduce toxicity, volume, and mobility.

Therefore, alternatives 2 and 5 best satisfy CERCLA's statutory preference for treatment and use of treatment to reduce toxicity, mobility, and volume of contaminants.

8.2.3 SHORT-TERM EFFECTIVENESS

Alternatives 4 and 7, capping, would have the greatest short-term effectiveness since the cap would be constructed in six months without disturbing the contaminated soils.

Alternatives 2, 3, 5, and 6, ex-situ solidification/stabilization and off-site disposal, would present a similar time frame for implementation as capping; however, potential risk to workers, the community and the environment, during implementation may be increased due to potential release of fugitive dust emissions during excavation. This potential increase in risk would be greatly mitigated by the short implementation time and engineered controls to prevent or limit dust emissions.

Alternatives 5, 6 and 7 (groundwater treatment) would need additional studies to determine groundwater treatment design specifications. Otherwise, they would have the nearly same effectiveness as Alternatives 2, and 3 due to the similar time periods for remediation of groundwater contamination as extraction and treatment.

8.2.4 IMPLEMENTABILITY

Alternative 2, ex-situ solidification/stabilization, and 4, capping, would be easily implemented and followed. Alternative 4 would be the simplest to construct because the technology is proven and materials are available locally. Alternatives 2 and 5 are relatively simple to do with the proper equipment and soil mix ratios and expertise and materials are readily available. Additional treatability studies would be required to insure maximum effectiveness.

Alternatives 5, 6 and 7 would require more complex designs for the groundwater treatment system. Treatability studies and an operator to maintain the system would also be required. In addition, further groundwater analyses would be required to more accurately determine treatment time to reach groundwater cleanup levels.

Alternative 3 and 6, off-site disposal, would be the most difficult to implement, because of limited treatment and disposal capacity and necessary State approval at regulated off-site facilities.

8.2.5 COST

Cost details are provided in Appendix 5 of the FS and are summarized below in Table 8-1. Alternative 4, capping, has the lowest present worth cost and alternative 6, off-site disposal with groundwater treatment, is the highest. Alternatives 5, 6, and 7 are significantly more expensive to construct and operate because of the groundwater extraction and treatment component. Alternatives 3 and 6 cost/benefit ratio is poor due to high offsite disposal costs. Alternative 2 provides for the best ratio of costs to benefit received through the permanent reduction of risks to human health and the environment.

8.3 MODIFYING CRITERIA

8.3.1 STATE ACCEPTANCE

The State of Georgia has concurred with the selection of Alternative #2 to remediate the Cedartown Industries Site.

8.3.2 COMMUNITY ACCEPTANCE

Based on comments expressed at the January 14, 1993, public meeting and receipt of four written comments during the comment period, it appears that the Cedartown community generally agrees with the selected remedy; however, various comments received during the meeting and two of the written responses did indicate a preference for Alternative 4, capping. Specific responses to issues raised by the community can be found in Appendix A, The Responsiveness Summary.

9.0 SUMMARY OF SELECTED REMEDY

Based upon consideration of the requirements of CERCLA, the NCP, the detailed analysis of alternatives and public and state comments, EPA has selected, alternative 2, a source control, groundwater monitoring, and a groundwater treatment contingency remedy for this Site. At the completion of this remedy, the risk associated with this Site will be protective of human health and the environment.

The selected alternative for the Cedartown Industries Site is consistent with the requirements of Section 121 of CERCLA and the National Contingency Plan. The selected alternative will reduce the mobility, toxicity, and volume of contaminated soil at the Site. In addition, the selected alternative is protective of human health and the environment, will attain all Federal and State applicable or relevant and appropriate requirements, is cost effective and utilizes permanent solutions to the maximum extent practicable. The selected alternative is consistent with previous removal actions conducted at the Site.

Based on the information available at this time, the selected alternative represents the best balance among the criteria used to evaluate remedies. Alternative No. 2 is believed to be protective of human health and the environment, will attain ARARs, will be cost effective, and will utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable.

The total present worth cost of the selected remedy, Alternative No. 2, is estimated at $3,372,180 or $4,923,700 if the contingency groundwater remedy is implemented.

A. SOURCE CONTROL

Source control remediation will address the contaminated surface and subsurface soils at the Site. Source control shall include the excavation of contaminated soils, transport, treatment through ex-situ solidification/stabilization, placement of treated materials and backfilling and regrading, repaving (asphalt or gravel) and/or vegetative cover of excavated areas.

Following source control remediation, institutional controls in the form of deed restrictions and record notices will be placed on the Site.

A.1. The major components of source control to be implemented include:

Based on the comparative analysis, EPA's preferred cleanup alternative for the Cedartown Industries Site is Alternative 2, treatment of affected surface and subsurface soils by ex-situ solidification/stabilization. This alternative includes:

- Excavating surface and subsurface soils with a lead concentration over 500 ppm (500 mg/kg). The surface soil clean-up levels will be used to determine the excavation locations and boundaries for surface soil. The subsurface soil clean-up level will be used to establish vertical and horizontal treatment boundaries for subsurface soil. A sampling program shall be conducted to confirm the actual volumes of surface soil and subsurface soil requiring remedial action as indicated in Table 9-1 and Figure 7-1. Based on the excavation performance standard of 500 mg/kg for lead, the volume of contaminated soil to be solidified/stabilized is approximately 19,280 cu yds. Prior to excavation of subsurface contaminated soils, any clean backfill would be excavated and stockpiled on site for reuse after the ex-situ solidification/stabilization process has been completed;

- removal of buildings or structures in areas requiring excavation if required. Currently, there is no evidence that contamination exists under the buildings. However, if contamination is found during the remedial design, appropriate action involving demolition of impacted structures may be undertaken;

- conducting bench and field-scale treatability studies and implementation of ex-situ solidification/stabilization of excavated subsurface soils and surface soils. Prior to designing the final solidification system, bench and pilot-scale treatability studies or testing shall be required to verify the effectiveness of the process optimization parameters and attainment of the performance standards;

- treating of contaminated soils to meeting treatment performance standards including meeting the toxicity characteristics regulatory levels, through ex-situ solidification/stabilization of the excavated soils;

- placement or disposal on site of treated soils upon meeting treatment performance standards including toxicity characteristics regulatory levels;

- covering excavated and treated areas with clean, compacted, native fill; regrading excavated and placement areas, and repaving with gravel or asphalt or establishing a vegetative cover to excavated and/or placement areas as determined in the remedial design to reduce rain infiltration and direct contact with the treated soils;

- placement of institutional controls, such as deed restrictions and record notices, on the Site which will be established to preclude usage of groundwater and minimize land use; and

- monitoring particulate air emissions from the Site to ensure compliance with the Clean Air Act. Air monitoring will be conducted to ensure that contaminant concentrations do not exceed levels considered to be safe for human health. If levels are exceeded, mitigation procedures, such as dust suppression or vapor capture, shall be employed to prevent harmful levels of air emissions from leaving the Site; and

- testing of the treated soils to ensure that performance requirements are met. A testing plan shall be approved by EPA as determined during the remedial design.

A.2. Ex situ treatment of excavated soils and materials

Alternative 2 consists of the treatment of contaminated surface and subsurface soils by ex-situ solidification/stabilization.

Process optimization parameters to be determined during treatability studies and remedial design include, but not limited to, selection of stabilizing agents and other additives, the waste-to-additive ratio, mixing and curing conditions, and availability of reagents and vendors. Performance standards include, but are not limited to, TCLP, unconfined compressive strength, permeability, and leachability.

A.3. Performance Standards for Soils

The Performance Standards for this component of the selected remedy include the following excavation and treatment standards:

a. Excavation Standards

Contaminated surface and subsurface soils and related materials shall be excavated for treatment. Excavation shall continue until the remaining soil and material achieve the maximum lead concentration levels of 500 ppm (mg/kg). Testing methods approved by EPA shall be used to determine if the maximum allowable lead concentration levels have been achieved.

b. Treatment Standards

The stabilized soils from this Site shall achieve all of the following four requirements for the technology to be considered effective. However, during the remedial design and at EPA's sole discretion, these requirements may be varied within a reasonable range as a result of unexpected site specific conditions and in consideration of the effectiveness of the technology and the clean-up goals for the Site.

1. The ex-situ solidification/stabilization mixture shall achieve and treated soils shall be characterized as non-hazardous as determined by TCLP testing.

2. The ex-situ solidification/stabilization mixture and treated soils shall achieve a minimum of 30 psi compressive strength. A professional engineer must certify that the soils of the Site have sufficient strength to structurally support the stabilized mass.

3. The ex-situ solidification/stabilization mixture and treated soils shall demonstrate a permeability of 1x10[-6] or less

4. The ex-situ solidification/stabilization mixture and treated soils shall demonstrate a leachablity of less than 1X10[-12] according to procedures described in modified ANS 16.1.

This decision is consistent with Superfund's guidelines for effective treatment which recommends a treatment range of 90 to 99 percent reduction in the concentration or mobility of the COCs.

Contaminated soils treatment and disposal implementation shall be determined during the Remedial Design phase and approved by EPA. Soil treatment and disposal shall comply with applicable or relevant and appropriate requirements.

B. GROUNDWATER MONITORING/RESTORATION

Groundwater monitoring will be implemented at this Site to assess the movement of contamination through groundwater. If cadmium levels do not meet monitoring performance standards or post cleanup sampling indicates soil COC's have migrated and contaminated the groundwater above their respective MCL, a contingency pump and treat system described in Alternative #5 shall be considered and at EPA's sole determination be implemented.

B.1. The major components of groundwater monitoring/restoration to be implemented include:

- Long-term monitoring of groundwater shall consist of the following:

1. Cleanup of cadmium-contaminated groundwater to the drinking water standard or MCL of 5 ug/l (0.005 mg/l) through natural attenuation. Cadmium is the only groundwater contaminant detected above MCLs and appears to be confined to one area in the surficial unit. Monitoring shall consist of sampling and analyzing for cadmium contamination at four existing downgradient (in the direction of groundwater flow) wells and one existing upgradient well. Monitoring shall be accomplished on a quarterly basis. Sampling may be discontinued at the discretion of EPA upon attainment of the performance standards. Once the source is immobilized through treatment, natural attenuation of the cadmium contamination is expected to take approximately two years. EPA shall consider and at EPA's sole determination implement a pump and treat system as described in Alternative No. 5, if the following conditions occur:

- cadmium levels increase during two consecutive quarters of sampling; and/or

- if natural attenuation has failed to achieve the cleanup standard of 5 ug/l after completing the third year of post-treatment groundwater monitoring.

2. Groundwater monitoring of soil COCs, including lead, shall be done through the post-cleanup period to verify that the treatment of soils and/or treated soils and material has not and will not release COCs to the groundwater. If two consecutive quarters of sampling indicate that soil COCs, including lead exceed their respective MCL, EPA shall consider initiating a pump and treat system as described in Alternative No. 5. Sampling may be discontinued at the discretion of EPA upon attainment of the source and groundwater performance standards;

- Placement of institutional controls, such as deed restrictions and record notices, on the Site which will be established to preclude usage of groundwater and minimize land use; and

- Implementation of a pump and treat system as a contingency remedy shall be at the sole discretion of EPA through determination that performance standards described in B.1 have not been met. The contaminated groundwater will be pumped to the surface and treated in accordance with performance standards established in B.2 below.

B.2. Extraction, Treatment, and Discharge of Contaminated Groundwater Contingency Remedy

The groundwater plume with levels of cadmium greater than the cleanup level or MCL of 5 ug/l (0.005 mg/l) has an approximate area of 22,500 square feet (ft[2]). The thickness of the surficial unit at the affected area is about 9 feet. Assuming an estimated average effective porosity of 0.35, the estimated volume of water to be treated is approximately 0.5 million gallons. The 30-year present worth estimated cost of implementing this contingency is an additional $1,551,520 for extraction and treatment system construction and O&M.

If implemented, the groundwater extraction system shall consist of a group of wells located within the estimated area of the plume designed to intercept the contaminated groundwater and treat to remove it to below the cleanup level or MCL. The pumping system shall be designed to provide a capture zone sufficient to intercept the delineated plume shall be targeted for extraction.

The effectiveness of the groundwater extraction system is dependent upon the aquifer characteristics, transmissivity and storativity. Typically, these design criteria are developed by aquifer testing based on constant discharge pumping and/or recovery tests. Additional pump tests and modeling shall be required prior to extraction. Based on conservative design criteria to be confirmed during the remedial design, transmissivity of 330 g/day/ft and storativity of 0.01, a minimum of 3 wells at a depth of approximately 15 feet would be needed to remediate the cadmium-contaminated groundwater. These wells will be spaced approximately 60 feet apart and located downgradient from MW-4 to intercept the delineated plume and provide a hydraulic barrier against plume migration. Each well would be pumped at an approximate rate of 1 gallon per minute with the total discharge of the extraction system totaling approximately 3 gpm. At this rate, approximately 4,300 gallons would be discharged for treatment per day.

Extracted groundwater concentrations are anticipated to be lower than the limits (0.3 mg/l) set for discharges to the public sewer system (Cedartown Code 22-64). Therefore, the groundwater will be discharged directly from the extraction system to the city sewer.

If discharge to the POTW cannot be obtained, NPDES standards shall be met for discharge to an off-Site surface water body. Any required groundwater treatment shall be accomplished by ion exchange or reverse osmosis. Treatability studies shall be done at implementation of this contingency remedy to determine design parameters and procedures. The treated effluent would be discharged to the surface water and the system will be designed to meet Federal and State NPDES limitations for discharge to the surface water.

If deemed necessary by EPA, the groundwater may require additional treatment on site with granular activated carbon or other treatment. The spent granular activated carbon will be sent to a hazardous waste facility for disposal as required.

B.3. Performance Standards for Groundwater

a. Treatment Standards

If the following standards are not met by natural attenuation, groundwater shall be treated until the following maximum concentration level is attained at the wells designated during the design and approved by the EPA as compliance points.

Cadmium 0.005 mg/l

If treatment of soils and/or treated soils and material releases COCs to the groundwater and if sampling indicates that soil COCs, including lead, exceed their respective MCL; the groundwater shall be treated until the MCL or drinking water standard for the released COCs is attained at the wells designated during the design and approved by EPA as compliance points.

b. Discharge Standards

Discharges from the groundwater treatment system shall comply with all substantive requirements of the NPDES permitting program under the Clean Water Act, 33 U.S.C. 1251 et seq., and all effluent limits established by EPA and the State of Georgia.

c. Design Standards

The design, construction, and operation of any groundwater treatment system shall be conducted in accordance with all Performance Standards, including the RCRA requirements set forth in 40 CFR Part 264 (Subpart F).

C. Compliance Testing

Groundwater and treated soils monitoring shall be conducted at this Site. After demonstration of compliance with all Performance Standards, sampling and monitoring may be discontinued at the discretion of EPA. If groundwater sampling or monitoring indicates that the Performance Standards set forth in paragraph B.1 and B.3 are being exceeded at any time after monitoring and/or pumping has been discontinued, extraction and treatment of the groundwater may recommence until the performance standards are once again achieved. If monitoring of the treated soil indicates performance standards set forth in paragraph A.3 have been exceeded, the effectiveness of the source control component may be re-evaluated.

10.0 STATUTORY DETERMINATION

Under CERCLA Section 121, 42 U.S.C. 9621, EPA must select remedies that are protective of human health and the environment, comply with applicable or relevant and appropriate requirements (unless a statutory waiver is justified), are cost effective, and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. In addition, CERCLA includes a preference for remedies that employ treatment that permanently and significantly reduce the volume, toxicity, or mobility of hazardous wastes as their principal element. The following sections discuss how the selected remedy meets these statutory requirements.

10.1 PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

The selected remedy protects human health and the environment through isolating and treating the principal threat by ex-situ solidification/stabilization of contaminated soils at the Site. The minimum level of overall protection provided by ex-situ solidification/stabilization is 1.0 x 10[-6]for the lifetime excess cancer risk and under 1 for the Hazard Index because the soil excavation and treatment performance standards of the affected soils limit risks to these values. Source excavation and treatment will minimize the potential for future migration of waste constituents to human receptors and the environment in and around the Site. Long-term exposure from direct contact with, ingestion of and inhalation of, affected soil and dusts will be minimized by treatment of all affected soils.

Groundwater monitoring will be implemented in accordance with performance standards described in Section 9.0 - SUMMARY OF SELECTED REMEDY, subsection B.1 (Groundwater Monitoring) to ensure that no exposure through ingestion of contaminated groundwater occurs. Currently only a single contaminant in one sampling location is above MCL at the Site. Therefore, no active remediation is to be immediately implemented for groundwater.

However, if contamination in the groundwater does not attenuate to below or soil released COCs exceed their respective MCLs according to performance standards described in Section 9.0 - SUMMARY OF SELECTED REMEDY, subsections B.1 (Groundwater Restoration); the performance standards described in Section 9.0 - SUMMARY OF SELECTED REMEDY, B.2 (Extraction, Treatment, and Discharge of Contaminated Groundwater Contingency Remedy) and B.3 (Performance Standards For Groundwater) shall apply and the aquifer shall be actively restored through treatment.

The selected remedy provides protection of human health and the environment by eliminating, reducing, and controlling risk through treatment, engineering controls and/or institutional controls as delineated through performance standards described in Section 9.0 - SUMMARY OF SELECTED REMEDY, subsections A (Source Control) and B (Groundwater Restoration).

10.2 ATTAINMENT OF THE APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs)

Remedial actions performed under CERCLA, Section 121, 42 U.S.C. 9621 must comply with all applicable or relevant and appropriate requirements (ARARs). All alternatives considered for the Site were evaluated on the basis of the degree to which they complied with these requirements. The selected remedy was found to meet or exceed ARARs identified in Tables 7-1, 2, 3 and 4 and TBC's listed in Table 7-5. The following is a short narrative in support of attainment of the pertinent ARARs.

Clean Air Act

Air emissions from the remedial cleanup activities at the Site, including treatment, will be monitored to ensure compliance with the substantive requirements of the Clean Air Act. Air monitoring will be conducted to ensure that contaminant concentrations do not exceed levels considered to be safe for human health. If levels are exceeded, mitigative procedures such as dust suppression or vapor capture will be employed to prevent harmful levels of air emissions from leaving the Site.

Chemical-Specific ARARs

Soil treatment and disposal and groundwater restoration performance standards are consistent with RCRA ARARs identified in Table 7-4 concerning Identification and Listing of Hazardous Wastes and Standards Applicable to Generators of Hazardous Waste.

Groundwater restoration performance standards identified as MCLs and non-zero MCLGs (where each is available) are the Groundwater Protection Standards set out in this ROD as the remedial action goals. If it becomes apparent that MCLs will not be met due to attenuation, a contingency pump and treat system will be implemented in accordance with performance standards identified in the selected remedy section to insure that MCLs are met. Action-Specific ARARs

Performance and treatment standards are consistent with RCRA ARARs identified in Tables 7-2 and 7-3 and these regulations will be incorporated into the design and implementation of this remedy. If a pump and treat systems becomes necessary, all National Pretreatment Standards will be met before off-Site discharge of treated groundwater to a POTW or all groundwater treatment standards will be met prior to discharge of effluent to a U.S. water under an NPDES permit.

Location-Specific ARARs

Performance standards are consistent with ARARs identified in Tables 7-1 and floodplain considerations, if determined necessary during the remedial design will be incorporated into the implementation of this remedy.

The recommended remedial alternative is protective of species listed as endangered or threatened under the Endangered Species Act. Requirements of the Interagency Section 7 Consultation Process, 50 CFR Part 402, will be met. The Department of the Interior, Fish & Wildlife Service, will be consulted during remedial design to assure that endangered or threatened species are not adversely impacted by implementation of this remedy.

Waivers

Section 121 (d)(4)(C) of CERCLA, 42 U.S.C. 9621(d)(4)(c), provides that an ARAR may be waived when compliance with an ARAR is technically impracticable from an engineering perspective. However, no waivers are anticipated to be invoked at this Site.

Other Guidance To Be Considered

Other Guidance To Be Considered (TBCs) include health-based advisories and guidance. TBCs have been utilized in estimating incremental cancer risk numbers for remedial activities at the Sites and in determining RCRA applications to contaminated media.

10.3 COST EFFECTIVENESS

Although Alternative No. 2, Ex-Situ Solidification/Stabilization is not the least expensive alternative, does provide more protection than the less expensive alternatives, no action and capping. In addition, this alternative satisfies the policy for treatment of the contaminated media. However, Alternative No. 2 is not as expensive as Alternative No. 3, offsite disposal, which is estimated to cost $9.6 million dollars. Alternative No. 3 also does not satisfy the preference for treatment and the three-fold cost increase is not warranted since Alternative No. 2 will also protect human health and the environment.

EPA believes the selected remedy, alternative No. 2 will eliminate the risks to human health at an estimated cost of $3,372,180 or $4,923,700 if the contingency groundwater remedy is implemented; therefore, the selected remedy provides an overall effectiveness proportionate to its costs, such that it represents a reasonable value achieved for the investment.

10.4 UTILIZATION OF PERMANENT SOLUTIONS TO THE MAXIMUM EXTENT PRACTICABLE

EPA and the State of Georgia have determined that the selected remedy represents the maximum extent to which permanent solutions and treatment technologies can be utilized in a cost-effective manner for the final source control at the Cedartown Industries Site. Of those alternatives that are protective of human health and the environment and comply with ARARs, EPA and the State have determined that this selected remedy provides the best balance of trade-offs in terms of long-term effectiveness and permanence, reduction in toxicity, mobility, or volume achieved through treatment, short-term effectiveness, implementability, and cost, while also considering the statutory preference for treatment as a principal element and consideration of state and community acceptance. The selected remedy is the only alternative that satisfies the statutory preference for treatment. The selected remedy provides for the long-term effectiveness and permanence, is easily implemented, reduces toxicity, mobility or, volume, and is cost effective. Most importantly this remedy reduces toxicity, mobility or, volume using a permanent treatment process.

The State of Georgia was concerned in that soil excavation performance standards, while protective of human health and the environment, would leave lead concentrations over site specific background values. Additionally, concerns were discussed that during the treatment of soils and after placement of the solidified/stabilized monolith, that the soil COCs may leach to the groundwater. To address these concerns, the selected remedy section, consistent with the proposed plan, requires analyzing groundwater for all soil COC's during the groundwater monitoring program to ensure groundwater is adequately protected.

The Cedartown community generally agrees with the selected remedy; however, various comments received during the meeting and written responses did indicate a preference for Alternative 4, capping.

10.5 PREFERENCE FOR TREATMENT AS A PRINCIPAL ELEMENT

By treating the contaminated soils by ex-situ solidification/stabilization, the selected remedy addresses one of the principal threats posed by the Site through the use of treatment technologies. By utilizing treatment as a significant portion of the remedy, the statutory preference for remedies that employ treatment as a principal element is satisfied.

11.0 DOCUMENTATION OF SIGNIFICANT CHANGES

There have been no significant changes in the selected remedy, alternative No. 2, ex-situ solidification/stabilization from the preferred remedy described in the proposed plan. However, there was a typographical error in clean-up goals presented in the Proposed Plan issued December 1992. The error was corrected at the Public Meeting held on January 14, 1993. The summary of cleanup levels for Beryllium was listed as .2 mg/kg. The correct value is 2.0 mg/kg. This correction does not affect the selection nor implementation of the selected remedy.

APPENDIX A:
RESPONSIVENESS SUMMARY - CEDARTOWN INDUSTRIES,
RECORD OF DECISION

The U.S. Environmental Protection Agency (EPA) held a 30-day public comment period was from December 28, 1992, through January 27, 1993 for interested parties to give input on EPA's Proposed Plan for Remedial Action at the Cedartown Industries Superfund Site in Cedartown, Georgia. A public meeting has conducted on January 14, 1993, at the Cedartown Public Library, 245 East Avenue, Cedartown, Georgia. The meeting presented the results of the Remedial Investigation and Feasibility Study (RI/FS) and EPA's preferred remedy for the Cedartown Industries Site.

A responsiveness summary is required to document how EPA addressed citizen comments and concerns about the Site, as raised during the public comment period. All comments summarized in this appendix have been factored into the final decision of the remedial action for the Cedartown Industries Site.

APPENDIX B - STATE CONCURRENCE LETTER

Georgia Department of Natural Resources
205 Butler Street, S.E., Suite 1252, Atlanta, Georgia 30334
Joe D. Tanner, Commissioner
Harold F. Reheis, Director
Environmental Protection Division

April 12, 1993

Mr. Jay V. Bassett
Remedial Project Manager
South Superfund Remedial Branch
U.S. Environmental Protection Agency
345 Courtland Street, N.W.
Atlanta, Georgia 30345

Re: State Concurrence
Record of Decision (ROD)
Cedartown Industries NPL Site
Cedartown, Georgia

Dear Mr. Bassett:

The State of Georgia Environmental Protection Division has reviewed the Record of Decision for the Cedartown Industries Superfund site located in Cedartown, Georgia. EPD has reviewed this document and has determined that all comments outlined in EPD's letter dated March 26, 1993 have been sufficiently addressed in the final Record of Decision. Therefore, the State of Georgia concurs with the U.S. Environmental Protection Division in selecting Alternative #2 for the final remedy.

Should you have any additional questions regarding this matter, please do not hesitate to contact Ms. Merrill Meek of my staff at 404/656-7802.

Sincerely,

Harold F. Reheis
Director

cc: Jim Ussery

HFR/mlm

File: Cedartown Industries NPL Site